

Appendix E4 – Restoration Plans and TMDLs (TMDL Compliance)

Harford County, MD Department of Public Works
Watershed Protection and Restoration
Chesapeake Bay Watershed Stormwater Load Reduction Status (MS4 Permit 11-DP-3310)



Barry Glassman
County Executive

CIPid	Project	Project Type	Completed	Cost	TN Reduced (lb/yr)	TP Reduced (lb/yr)	TSS Reduced (lb/yr)	
	Willoughby Beach SWM Retrofit & Stream Restoration	SWM Facility (ST)	May 2020		2.56	0.02	275,060	*
	Willoughby Beach SWM Retrofit & Stream Restoration	SWM Facility (ST)	May 2020		5.94	0.04	208,860	*
HA20ALN000018	Willoughby Beach SWM Retrofit & Stream Restoration	Stream Restoration (coastal plain)	May 2020	\$1,406,956	1363	517	986,000	
CIP0108	Willoughby Beach SWM Retrofit & Stream Restoration	SWM Retrofit (ST)	May 2020	\$87,761	23.02	0.12	2,584,640	
CIP0109	Willoughby Beach SWM Retrofit & Stream Restoration	SWM Facility (ST)	May 2020	\$70,417	18.74	0.12	2,584,640	
CIP0110	Willoughby Beach SWM Retrofit & Stream Restoration	SWM Retrofit (ST)	May 2020	\$228,942	119.38	0.18	15,917,340	
	Plumtree Run at Barrington Stream Restoration	SWM Facility (ST)	May 2020		5.81	0.07	895,340	*
CIP0039	Plumtree Run at Barrington Stream Restoration	SWM Facility (ST)	May 2020	\$57,115	11.79	0.15	1,817,800	
CIP0111	Plumtree Run at Barrington Stream Restoration	SWM Facility (ST)	May 2020	\$238,878	47.17	0.35	9,768,340	
HA20ALN000019	Plumtree Run at Barrington Stream Restoration	Stream Restoration (piedmont)	May 2020	\$2,908,605	188.42	75.64	622,660	
CIP0113	Plumtree Run at Barrington Stream Restoration	SWM Facility (ST)	May 2020	\$38,205	13.21	0.05	865,960	
CIP0114	Plumtree Run at Barrington Stream Restoration	SWM Facility (RR)	May 2020	\$23,155	25.1	0.21	2,191,440	
CIP0115	Plumtree Run at Barrington Stream Restoration	SWM Facility (ST)	May 2020	\$16,594	13.94	0.49	3,110,740	

HA20ALN000016	Annie's Playground Stream Restoration	Stream Restoration (piedmont)	Oct 2019	\$701,167	244.35	221.54	807,980
CIP0106	Annie's Playground Stream Restoration	Pervious Urban to Forest	Oct 2019	\$8,178	9.57	1.54	247
HA20ALN000017	Tributary to Plumtree Run at Wakefield Manor Stream Restoration	Stream Restoration (piedmont)	Dec 2019	\$97,159	8.58	21.45	38,900
CIP0116	Courthouse Bioretention	SWM Facility (RR)	May 2020	\$165,415	3.87	0.96	767,180
CIP0117	Mariner Point Tree Planting	Pervious Urban to Tree Canopy	Jun 2020	\$79,044	3.24	0.52	167,280
HA19ALN000014	Bynum at St. Andrews Way Stream Restoration	Stream Restoration	May 2019	\$2,083,000	231.3	209.71	185,040
CIP0104	Homestead Elementary Retrofit	SWM Retrofit (RR)	Jun 2019	\$131,000	39.22	3.48	1,760
CIP0035	Ring Factory ES SWM Retrofit & Stream Restoration	SWM Retrofit (ST)	Jun 2018	\$651,349	124.00	12.69	7,140
HA18ALN000002	Ring Factory ES SWM Retrofit & Stream Restoration	Stream Restoration	Jun 2018	\$777,345	79.13	71.74	47,380
HA18ALN000004	Ring Factory ES SWM Retrofit & Stream Restoration	Outfall Stabilization	Jun 2018	\$61,893	0	0	0
HA18ALN000001	Bear Cabin Branch Wetland and Stream Restoration	Stream Restoration	May 2018	\$1,090,000	276.60	249.90	165,000
HA18ALN000003	Lower Wheel Creek SWM Retrofit & Stream Restoration	Stream Restoration	Nov 2017	\$1,764,082	327.75	297.16	196,213
CIP0079	Lower Wheel Creek SWM Retrofit & Stream Restoration	SWM Facility (ST)	Nov 2017	\$56,515	33.40	2.86	1,420
CIP0076	Lower Wheel Creek SWM Retrofit & Stream Restoration	SWM Facility (ST)	Nov 2017	\$102,131	58.20	4.84	2,380
CIP0078	Lower Wheel Creek SWM Retrofit & Stream Restoration	SWM Facility (ST)	Nov 2017	\$79,929	77.77	6.72	3,280
CIP0077	Lower Wheel Creek SWM Retrofit & Stream Restoration	SWM Facility (ST)	Nov 2017	\$101,324	68.19	5.57	2,720
CIP0070	Abingdon Library Water Quality Improvements	SWM Retrofit (RR)	Nov 2017	\$10,446	6.61	0.43	200
CIP0099	Abingdon Library Water Quality Improvements	SWM Facility (RR)	Nov 2017	\$174,105	66.30	5.53	2,760
CIP0098	Abingdon Library Water Quality Improvements	Pervious Urban to Forest	Nov 2017	\$32,500	8.78	0.62	1,120

CIP0102	Leight Center Parking Lot Green Infrastructure	SWM Facility (RR)	Nov 2017	\$209,779	0.27	0.13	80
CIP0103 CIP0046	Leight Center Parking Lot Green Infrastructure	SWM Facility (RR)	Nov 2017	\$67,671	3.77	0.36	200
CIP0025	Wheel Creek at Country Walk 1B SWM Retrofit	Stormwater Treatment (ST)	Jun 2017	\$530,480	29.60	5.80	1,777
HA18ALN000005	Foster Branch at Dembytown Stream Restoration	Stream Restoration	Apr 2017	\$902,793	1561.00	277.00	42,377
CIP0036	Foster Branch at Dembytown Water Quality	Runoff Reduction (RR)	Apr 2017	\$12,958	189.67	13.14	7,963
CIP0024	Wheel Creek at Country Walk 1A SWM Retrofit	Stormwater Treatment (ST)	Jun 2016	\$386,987	94.35	7.36	18,504
CIP0080	Wheel Creek at Country Walk 1A SWM Retrofit	Stormwater Treatment (ST)	Jun 2016	\$189,545	25.92	2.40	6,226
CIP0026	Wheel Creek at Festival at Bel Air SWM Retrofit	Stormwater Treatment (ST)	Feb 2016	\$385,601	67.43	10.82	30,225
	Willoughby Beach Road Tree Planting	Urban Tree Planting	Oct 2015	\$11,844	7.07	0.29	47
	Trappe Church Road Tree Planting	Urban Tree Planting	Oct 2015	\$6,802	3.30	0.13	22
CIP0073	Hickory Elementary Retrofit	Runoff Reduction (RR)	Jul 2015	\$82,199	23.38	1.59	2,051
CIP0031	Norrisville Elementary Bioretention	Runoff Reduction (RR)	Jun 2015	\$112,600	9.04	0.61	784
CIP0064	Oakmont Road Tree Planting	Urban Tree Planting	Apr 2015	\$7,761	9.42	0.38	62
CIP0063	Rider Lane Tree Planting	Urban Tree Planting	Apr 2015	\$18,302	9.42	0.38	62
HA18ALN000006	Woodbridge Stream Restoration	Stream Restoration (Coastal Plain)	Apr 2015	\$619,242	92.78	84.12	18,716
	Patterson Mill High School Tree Planting II	Urban Tree Planting	Apr 2015	\$25,519	15.07	0.61	99
	Amoss Mill Road Tree Planting II	Urban Tree Planting	Apr 2015	\$6,291	2.59	0.10	17
	Edwards Lane Tree Planting II	Urban Tree Planting	Apr 2015	\$30,772	21.10	0.85	139
	Red Pump Elementary School Tree Planting II	Urban Tree Planting	Apr 2015	\$17,742	8.10	0.33	53

	Magnolia Middle School Tree Planting II	Urban Tree Planting	Apr 2015	\$12,267	5.79	0.23	38
CIP0061	Amoss Mill Road Tree Planting	Urban Tree Planting	Oct 2014	\$8,448	2.21	0.09	15
CIP0060	Edwards Lane Tree Planting	Urban Tree Planting	Oct 2014	\$25,952	11.96	0.48	79
CIP0062	Harford Christian School Tree Planting	Urban Tree Planting	Oct 2014	\$15,972	7.77	0.31	51
CIP0056	Magnolia Middle School Tree Planting	Urban Tree Planting	Apr 2014	\$5,295	2.83	0.11	19
CIP0054	Mt Soma Property Tree Planting	Urban Tree Planting	Apr 2014	\$28,684	11.96	0.48	79
CIP0058	North Harford High School Tree Planting	Urban Tree Planting	Apr 2014	\$3,593	1.88	0.08	12
CIP0059	Perryman Wellfield Tree Planting	Urban Tree Planting	Apr 2014	\$43,183	22.47	0.91	148
CIP0049	Churchville Recreation Complex Tree Planting	Urban Tree Planting	Oct 2013	\$7,434	3.01	0.12	20
CIP0053	Harford Center Tree Planting	Urban Tree Planting	Oct 2013	\$9,983	2.68	0.11	18
CIP0048	Heaven Waters Boulton Street Tree Planting	Urban Tree Planting	Oct 2013	\$7,546	2.45	0.10	16
CIP0050	Walters Mill Tree Planting	Urban Tree Planting	Oct 2013	\$31,099	13.42	0.54	88
CIP0057	Patterson Mill High School Tree Planting	Urban Tree Planting	Apr 2013	\$23,688	10.13	0.41	67

Totals	\$17,091,244	5,776.79 73%	2,122.06 27%	44,356,873
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FY2025 Target Reduction	\$30,000,000	10,140 73%	3,725 27%
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Harford County, MD Department of Public Works
Watershed Protection and Restoration
Bynum Run Watershed Stormwater Load Reduction Status (MS4 Permit 11-DP-3310)



Barry Glassman
County Executive

CIPid	Project	Project Type	Completed	Cost	TSS Reduced (lb/yr)
HA19ALN000014	Bynum at St. Andrews Way Stream Restoration	Stream Restoration	May 2019	\$2,083,000	138,780
CIP0057	Patterson Mill High School Tree Planting	Urban Tree Planting	Apr 2013	\$23,688	67
	Patterson Mill High School Tree Planting II	Urban Tree Planting	Apr 2015	\$25,519	12

Totals	\$2,132,207	138,859
2025Target	\$5,000,000	325,623



Harford Streams is a program developed and administered through Harford County Department of Public Works

Chesapeake Bay

	TN	TP	TSS
Allocaion (lbs/yr)	103,670	97,435	
Restoration (bls/yr)	5,777	2,122	44,356,873
FY2019 Target (lbs/yr)	25,616	1,335	
FY2025 Target (lbs/yr)	15,917	5,847	

*FY2025 based on actuals cost verses reduction projected through FY2025

Allocations (FY2019 Annual Report Review) (2/14/2020)

	Bush	North CB	Gunpowder	Total
TN (%)	26.6%	33.3%	27.1%	
TN (lbs/yr)	103,670	97,435	24,258	225,363
TP (%)	49.4%	49.1%	48.1%	
TP (lbs.yr)	8,190	4,446	2,061	14,697

Allocations (EOS) (2/14/2020)

	Bush	North CB	Gunpowder	Total
TN (%)	26.6%	33.3%	27.1%	
TN (lbs/yr)	268,246	164,965	58,580	491,791
TP (%)	49.4%	49.1%	48.1%	
TP (lbs.yr)	8,939	4,445	2,061	15,445

Bynum

	TSS
Allocaion (tons/yr)	628
Restoration (lbs/yr)	69
FY2019 Target (tons/yr)	40
FY2025 Target (lbs/yr)	232

*FY2025 based on actuals cost verses reduction projected through FY2025

TSS (%)	19.7%	FY2019 Annual Report
TSS (tons/yr)	628	
TSS (%)	19.7%	MDE TMDL Center
TSS (tons/yr)	2,291	



Stormwater WLAs for County Storm Sewer Systems in Harford County

Harford County Phase I MS4

MD0068268

Substance	Allocation Units		Reduction	Allocation Type	Baseline Year	Equation Description	Eqn Location	MS4 Allocation Notes	Report Name	TMDL Map	GIS ID
E.coli	35.00	billion MPN/year	0%	Aggregate	2004	Annual Average	8 Digit WS 02130805 / Loch Raven Reservoir		Loch Raven Reservoir Bacteria	Map	G1121
Nitrogen	200.92	delivered pounds/year	37.6%	Individual Planning Target	See Note	Annual Average (Delivered)	Segmentshed CB2OH / Northern Chesapeake Bay Oligohaline	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G1010
Nitrogen	200.92	EOS pounds/year	37.6%	Individual Planning Target	See Note	Annual Average (EOS)	Segmentshed CB2OH / Northern Chesapeake Bay Oligohaline	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G1010
Nitrogen	43960.09	delivered pounds/year	27.7%	Individual Planning Target	See Note	Annual Average (Delivered)	Segmentshed GUNOH / Gunpowder River Oligohaline	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G1024
Nitrogen	58580.49	EOS pounds/year	27.1%	Individual Planning Target	See Note	Annual Average (EOS)	Segmentshed GUNOH / Gunpowder River Oligohaline	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G1024
Nitrogen	127194.74	delivered pounds/year	33.8%	Individual Planning Target	See Note	Annual Average (Delivered)	Segmentshed CB1TF / Northern Chesapeake Bay Tidal Fresh	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G1009
Nitrogen	164965.36	EOS pounds/year	33.3%	Individual Planning Target	See Note	Annual Average (EOS)	Segmentshed CB1TF / Northern Chesapeake Bay Tidal Fresh	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G1009
Nitrogen	182119.95	delivered pounds/year	28.3%	Individual Planning Target	See Note	Annual Average (Delivered)	Segmentshed BSHOH / Bush River Oligohaline	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G1006

Harford County Phase I MS4

MD0068268

Substance	Allocation Units		Reduction	Allocation	Baseline	Equation	Eqn Location	MS4 Allocation Notes	Report Name	TMDL	GIS ID			
										Type	Year	Description		
Nitrogen	268246.49	EOS pounds/year	26.6%	Individual Planning Target	See Note	Annual Average (EOS)	Segmentshed BSHOH / Bush River Oligohaline	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G1006			
Nitrogen	353475.70	delivered pounds/year	30.32%	Individual Planning Target	See Note	Annual Average (Delivered)	County - Harford	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G2572			
Nitrogen	491993.26	EOS pounds/year	29.05%	Individual Planning Target	See Note	Annual Average (EOS)	County - Harford	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G2572			
PCBs	18.89	grams/year	62%	Aggregate	2010	Annual Average	Segmentshed BSHOH / Bush River		Bush River PCBs	Map	G1006			
PCBs	9.30	grams/year	0%	Aggregate	2010	Annual Average	8-Digit WS 02130801 / Gunpowder River		Gunpowder and Bird Rivers PCBs	Map	G1024			
Phosphorus	33.00	pounds/year	15%	Aggregate	1995	Annual Average	8 Digit WS 02130805 / Loch Raven Reservoir		Loch Raven Reservoir Nutrients and Sediment	Map	G1121			
Phosphorus	11.25	delivered pounds/year	51.9%	Individual Planning Target	See Note	Annual Average (Delivered)	Segmentshed CB2OH / Northern Chesapeake Bay Oligohaline	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G1010			
Phosphorus	11.25	EOS pounds/year	51.9%	Individual Planning Target	See Note	Annual Average (EOS)	Segmentshed CB2OH / Northern Chesapeake Bay Oligohaline	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G1010			
Phosphorus	1814.87	delivered pounds/year	48.2%	Individual Planning Target	See Note	Annual Average (Delivered)	Segmentshed GUNOH / Gunpowder River Oligohaline	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G1024			
Phosphorus	2061.77	EOS pounds/year	48.1%	Individual Planning Target	See Note	Annual Average (EOS)	Segmentshed GUNOH / Gunpowder River Oligohaline	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G1024			
Phosphorus	3548.57	delivered pounds/year	49.2%	Individual Planning Target	See Note	Annual Average (Delivered)	Segmentshed CB1TF / Northern Chesapeake Bay Tidal Fresh	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G1009			

Harford County Phase I MS4

MD0068268

Substance	Allocation Units		Reduction	Allocation Type	Baseline Year	Equation Description	Eqn Location	MS4 Allocation Notes	Report Name	TMDL	GIS ID
Phosphorus	4445.43	EOS pounds/year	49.1%	Individual Planning Target	See Note	Annual Average (EOS)	Segmentshed CB1TF / Northern Chesapeake Bay	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G1009
							Tidal Fresh				
Phosphorus	7048.57	delivered pounds/year	49.4%	Individual Planning Target	See Note	Annual Average (Delivered)	Segmentshed BSHOH / Bush River Oligohaline	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G1006
Phosphorus	8939.52	EOS pounds/year	49.4%	Individual Planning Target	See Note	Annual Average (EOS)	Segmentshed BSHOH / Bush River Oligohaline	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G1006
Phosphorus	12423.25	delivered pounds/year	49.17%	Individual Planning Target	See Note	Annual Average (Delivered)	County - Harford	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G2572
Phosphorus	15457.96	EOS pounds/year	49.15%	Individual Planning Target	See Note	Annual Average (EOS)	County - Harford	Phase II WIP Targets. Reduction from 2009 progress.	The Chesapeake Bay TMDL	Map	G2572
TSS	2291.30	tons/year	19.7%	Individual	2005	Annual Average	8 Digit WS 02130704 / Bynum Run		Bynum Run Sediment	Map	G1082
TSS	6.00	tons/year	0%	Aggregate	1995	Annual Average	8 Digit WS 02130805 / Loch Raven Reservoir		Loch Raven Reservoir Nutrients and Sediment	Map	G1121
TSS	56.00	tons/year	13%	Individual	2009	Annual Average	8-Digit WS 02130706 / Swan Creek		Swan Creek Sediment	Map	G1180
TSS		delivered pounds/year	See Phase II WIP	Individual Planning Target	See Note	Annual Average (Delivered)	County - Harford	Per Maryland's Phase II WIP, if TP target is met, TSS target will be met.	The Chesapeake Bay TMDL	Map	G2572
TSS		delivered pounds/year	See Phase II WIP	Individual Planning Target	See Note	Annual Average (Delivered)	Segmentshed BSHOH / Bush River Oligohaline	Per Maryland's Phase II WIP, if TP target is met, TSS target will be met.	The Chesapeake Bay TMDL	Map	G1006
TSS		delivered pounds/year	See Phase II WIP	Individual Planning Target	See Note	Annual Average (Delivered)	Segmentshed CB1TF / Northern Chesapeake Bay Tidal Fresh	Per Maryland's Phase II WIP, if TP target is met, TSS target will be met.	The Chesapeake Bay TMDL	Map	G1009

Harford County Phase I MS4

MD0068268

Substance	Allocation Units	Reduction	Allocation Type	Baseline Year	Equation Description	Eqn Location	MS4 Allocation Notes	Report Name	TMDL Map	GIS ID
TSS	delivered pounds/year	See Phase II WIP	Individual Planning Target	See Note	Annual Average (Delivered)	Segmentshed CB2OH / Northern Chesapeake Bay Oligohaline	Per Maryland's Phase II WIP, if TP target is met, TSS target will be met.	The Chesapeake Bay TMDL	Map	G1010
TSS	delivered pounds/year	See Phase II WIP	Individual Planning Target	See Note	Annual Average (Delivered)	Segmentshed GUNOH / Gunpowder River Oligohaline	Per Maryland's Phase II WIP, if TP target is met, TSS target will be met.	The Chesapeake Bay TMDL	Map	G1024
TSS	EOS pounds/year	See Phase II WIP	Individual Planning Target	See Note	Annual Average (EOS)	County - Harford	Per Maryland's Phase II WIP, if TP target is met, TSS target will be met.	The Chesapeake Bay TMDL	Map	G2572
TSS	EOS pounds/year	See Phase II WIP	Individual Planning Target	See Note	Annual Average (EOS)	Segmentshed BSHOH / Bush River Oligohaline	Per Maryland's Phase II WIP, if TP target is met, TSS target will be met.	The Chesapeake Bay TMDL	Map	G1006
TSS	EOS pounds/year	See Phase II WIP	Individual Planning Target	See Note	Annual Average (EOS)	Segmentshed CB1TF / Northern Chesapeake Bay Tidal Fresh	Per Maryland's Phase II WIP, if TP target is met, TSS target will be met.	The Chesapeake Bay TMDL	Map	G1009
TSS	EOS pounds/year	See Phase II WIP	Individual Planning Target	See Note	Annual Average (EOS)	Segmentshed CB2OH / Northern Chesapeake Bay Oligohaline	Per Maryland's Phase II WIP, if TP target is met, TSS target will be met.	The Chesapeake Bay TMDL	Map	G1010
TSS	EOS pounds/year	See Phase II WIP	Individual Planning Target	See Note	Annual Average (EOS)	Segmentshed GUNOH / Gunpowder River Oligohaline	Per Maryland's Phase II WIP, if TP target is met, TSS target will be met.	The Chesapeake Bay TMDL	Map	G1024